

Diplostomes from the Brown Pelican, *Pelecanus occidentalis* (Pelecanidae), from the Galveston, Texas Area, including Two New Species of *Bursacetabulus* gen. n.

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ABSTRACT: During a study of digeneans of shorebirds from the Galveston, Texas, area of the Gulf of Mexico, brown pelicans, *Pelecanus occidentalis*, were found to be infected with 2 species of a new genus of Diplostomidae, *Bursacetabulus pelecanus* sp. n. and *B. macrobursus* sp. n. *Bursacetabulus* gen. n. can be distinguished from all other genera of Diplostominae by having an inconspicuous, pouchlike tribocytic organ that contains portions of the uterus and vitellaria, a suckerlike copulatory bursa, and ceca terminating some distance anterior to the posterior end of the body. The new genus is most similar to *Tylodelphys* but has a much shorter hind body, the vitellaria do not extend past the testes in the hind body, and it lacks a prepharynx, genital cone, and highly structured tribocytic organ. *Bursacetabulus macrobursus* sp. n. can be distinguished from *B. pelecanus* sp. n. by having a larger body size and a large bell-shaped skirt around the copulatory bursa. One of the brown pelicans also harbored *Bolbophorus confusus*, not previously reported from this host.

KEY WORDS: Diplostomidae, Diplostominae, *Bursacetabulus macrobursus* sp. n., *Bursacetabulus pelecanus* sp. n., *Pelecanus occidentalis*, Gulf of Mexico, Galveston, Texas.

The brown pelican, *Pelecanus occidentalis* Linnaeus, 1766, is a piscivorous species that ranges in the Americas from North Carolina to Brazil in the east and from California to Chile in the west (Rappole and Blacklock, 1994). Courtney and Forrester (1974) examined 130 brown pelicans from Florida and Louisiana and found 11 species of trematodes but did not report any species of diplostomes. Although 2 species of diplostomes have been reported from the American white pelican, *Pelecanus erythrorhynchus* Gmelin, 1789 (*Bolbophorus confusus* (Krause, 1914) Dubois, 1935, by Fox and Olsen [1965] and *Diplostomum spathaceum* (Rudolphi, 1819) Olsson, 1876, by McLaughlin [1974]), none have been reported from the brown pelican. The purpose of this study was to expand our knowledge of the diplostomes from the brown pelican.

Materials and Methods

Three moribund brown pelicans salvaged from the Galveston Bay area of the Gulf of Mexico, died under the care of licensed bird rehabilitators between 1 May 1994 and 3 January 1997 and were examined immediately after death for intestinal parasites under the direction of Dr. Jackie Cole of Galveston, Texas (U.S. Fish & Wildlife Service permit no. PRT 760668; Texas Parks & Wildlife Department permit no. TX SPH

0491253; Texas Veterinary license no. 5982). Live specimens of endohelminths from a fourth brown pelican were provided by the U.S. Fish and Wildlife Service (Dr. Tom Craig, Texas Veterinary Diagnostic Laboratory, College of Veterinary Medicine, Texas A&M University) on 5 January 1998. Trematodes were relaxed in saline, heat-fixed under slight coverslip pressure in AFA, stained in Semichon's carmine, and mounted in Kleermount® or Canada balsam. Drawings were done with the aid of a drawing tube. Measurements are given as the mean, followed by the range in parentheses, unless otherwise stated.

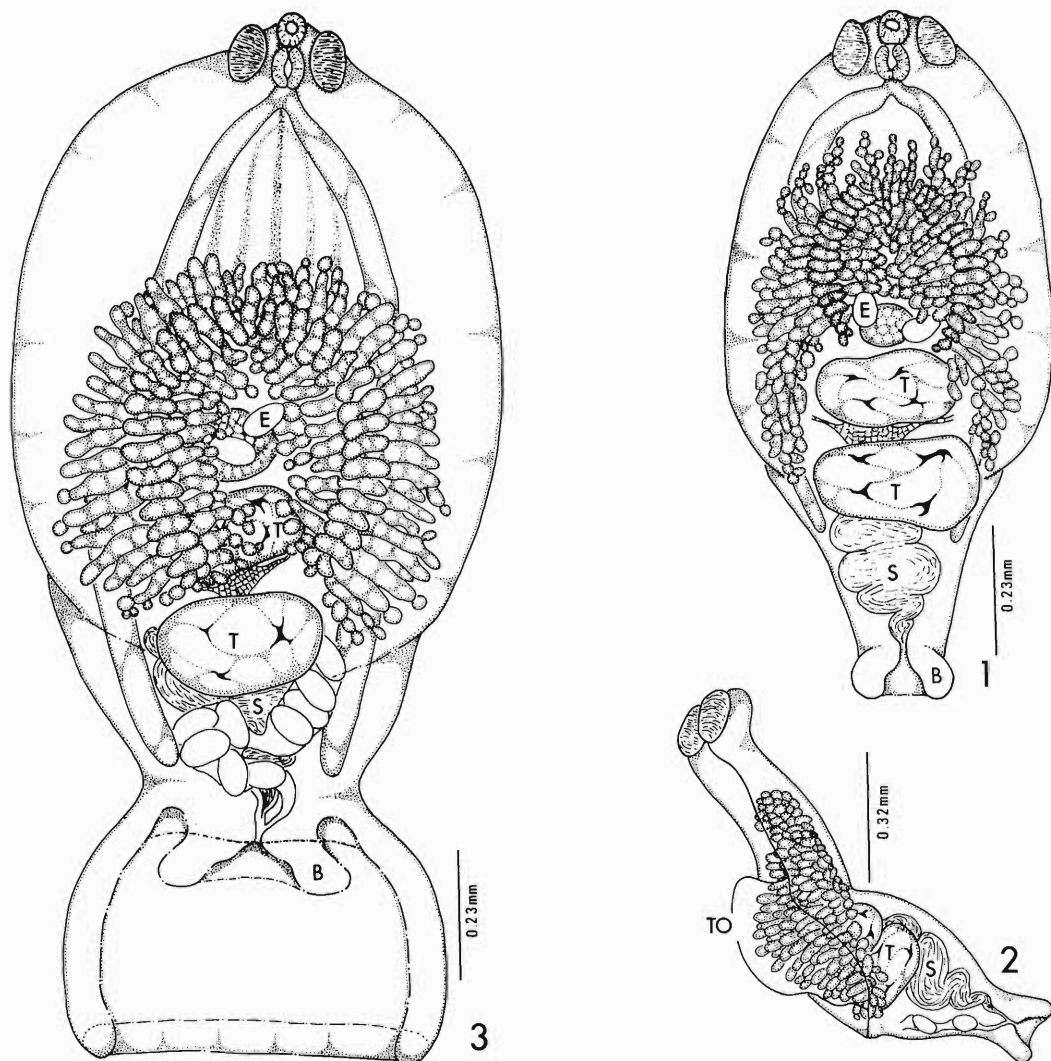
Results

One of 4 brown pelicans harbored 6 specimens of *Bolbophorus confusus* (Bolbophoridae Shoop, 1989), and all 4 harbored 2 undescribed species of Diplostomidae Poirier, 1886 (Diplostominae Monticelli, 1888), representing a new genus.

Bursacetabulus gen. n.

DIAGNOSIS: Diplostomidae, Diplostominae. Body aspinose, bisegmented; forebody longer than hind body, with large, inconspicuous, pouchlike tribocytic organ. Oral sucker and pharynx present; bifurcate ceca, terminating some distance from posterior end; prepharynx absent. Pseudosuckers present, acetabulum absent. Vitellaria distributed primarily in forebody, extending laterally into tribocytic organ and ventrolaterally a short distance into hind body. Re-

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Figures 1–3. *Bursacetabulus* gen. n. 1. Ventral view of *B. pelecanus* sp. n. showing suckерlike copulatory bursa (B), eggs in uterus (E), seminal vesicle (S), and testes (T). 2. Side view of *B. pelecanus* sp. n. showing seminal vesicle (S), testes (T), and tribocytic organ (TO). 3. Ventral view of *B. macrobursus* sp. n. showing copulatory bursa surrounded by bell-shaped skirt (B), eggs in uterus (E), seminal vesicle (S), and testes (T).

productive organs in hind body; testes smooth to slightly lobed, tandem; cirrus sac absent; ovary median to slightly dextral, immediately pretesticular. Genital pore opening into well developed suckерlike bursa at posterior extremity. Genital cone absent. Eggs large, operculate. Excretory pore opening dorsally on midline of body, just anterior to copulatory bursa.

TYPE SPECIES: *Bursacetabulus pelecanus* sp. n.

ETYMOLOGY: Genus named for the suckерlike appearance of the copulatory bursa.

***Bursacetabulus pelecanus* sp. n.**
(Figs. 1, 2)

DESCRIPTION (BASED ON 10 ADULT SPECIMENS): With characteristics of the genus. Body indistinctly bisegmented, 1,210 (1,074–1,400) μm long; forebody slightly spatulate, 886 (790–

1,130) μm long by 535 (470–650) μm wide, hind body 535 (480–600) μm long by 475 (390–550) μm wide. Oral sucker subterminal, 55 (40–70) μm long by 58 (50–65) μm wide. Pseudosuckers well developed, 96 (80–112) μm long by 59 (50–75) μm wide. Acetabulum absent. Tribocytic organ circular to elliptical, 290 (280–300) μm long by 300 (250–375) μm wide. Prepharynx absent, pharynx 46 (36–55) μm long by 49 (40–65) μm wide, esophagus 19 (15–28) μm long, ceca terminating just posterior to middle of hind body. Ratio of pharynx to oral sucker 1:1.2. Testes smooth, tandem; anterior testis 180 (150–220) μm long by 245 (190–300) μm wide, posterior testis 168 (140–210) μm long by 258 (220–330) μm wide. Copulatory bursa well developed, suckerlike, forming posterior end of hind body. Seminal vesicle voluminous, highly coiled, extending posteriorly from level of ovary to near anterior margin of copulatory bursa. Ovary median to slightly dextral, 77 (55–95) μm long by 86 (60–100) μm wide. Ootype located at level of anterior testis, near midline of body. Laurer's canal not observed. Vitelline follicles large, distributed primarily in forebody, extending laterally into tribocytic organ and ventrolaterally into hind body to level of posterior testis. Uterus intercecal, with medial loops extending into tribocytic organ, joining seminal vesicle just above anterior margin of copulatory bursa. Eggs 83 (72–90) μm long by 55 (47–65) μm wide.

TYPE HOST: *Pelecanus occidentalis* Linnaeus.

TYPE LOCALITY: Galveston County, Texas, area of the city of Galveston.

SITE OF INFECTION: Small intestine.

SPECIMENS DEPOSITED: Holotype U.S. National Parasite Collection (USNPC) 88112; paratypes USNPC (2 specimens) 88113 and the University of Nebraska State Museum Harold W. Manter Laboratory (HWML) (3 specimens) 39905.

ETYMOLOGY: Named for the genus of the host from which it was collected.

Bursacetabulus macrobursus sp. n.

(Fig. 3)

DESCRIPTION (BASED ON 10 ADULT SPECIMENS): With characteristics of genus. Body indistinctly bisegmented, 1,830 (1,470–2,250) μm long; forebody slightly spatulate, 1,250 (1,070–1,370) μm long by 885 (750–1,000) μm wide, hind body 1,025 (975–1,050) μm long by 740

(670–805) μm wide. Oral sucker subterminal, 62 (57–70) μm long by 70 (60–98) μm wide. Pseudosuckers well developed, 105 (87–133) μm long by 64 (50–75) μm wide. Acetabulum absent. Tribocytic organ circular to elliptical, 385 (375–400) μm long by 340 (330–350) μm wide. Prepharynx absent, pharynx 66 (57–75) μm long by 62 (47–73) μm wide, esophagus 25 (17–30) μm long, ceca terminating just posterior to middle of hind body. Ratio of pharynx to oral sucker 1:1.1. Testes smooth, tandem; anterior testis 190 (145–290) μm long by 240 (150–310) μm wide, posterior testis 187 (145–280) μm long by 260 (130–290) μm wide. Copulatory bursa large, suckerlike, surrounded by bell-shaped skirt, 454 (330–590) μm long by 630 (490–740) μm wide. Seminal vesicle voluminous, highly coiled, extending posteriorly from level of ovary to near anterior margin of copulatory bursa. Ovary median to slightly dextral, 105 (85–120) μm long by 110 (82–138) μm wide. Ootype located at level of anterior testis, near midline of body. Laurer's canal not observed. Vitelline follicles, distributed primarily in forebody, extending laterally into tribocytic organ and ventrolaterally into hind body to level of posterior testis. Uterus intercecal, with medial loops extending into tribocytic organ, joining seminal vesicle just above anterior margin of copulatory bursa. Eggs 89 (80–98) μm long by 57 (47–68) μm wide.

TYPE HOST: *Pelecanus occidentalis* Linnaeus.

TYPE LOCALITY: Galveston County, Texas, area of the city of Galveston.

SITE OF INFECTION: Small intestine.

SPECIMENS DEPOSITED: Holotype USNPC 88114; paratypes USNPC (2 specimens) 88115 and HWML (3 specimens) 39906.

ETYMOLOGY: Named for the large, bell-shaped skirt around the copulatory bursa.

Discussion

Bursacetabulus gen. n. bears some similarities to *Glossodiplostomoides* Bhalerao, 1942, *Hysteromorpha* Lutz, 1931, and *Neolaria* Lal, 1939 but can be distinguished from all genera of Diplostominae by having an inconspicuous pouch-like tribocytic organ that contains portions of both the uterus and vitellaria, a well developed suckerlike copulatory bursa, and shorter ceca that terminate some distance anterior to the posterior end. The new genus is most similar to *Ty-*

lodelphys Diesing, 1850 but differs in having a much shorter hind body and vitellaria that extend into the hind body only to the level of the posterior testis instead of beyond the testes. The new genus also lacks a prepharynx, a genital cone, an acetabulum, and a highly structured tribocytic organ as seen in species of *Tylodelphys*. The new genus is superficially similar to *Austrodiplostomum* Szidat et Nani, 1951, which also has an indistinctly bipartite body, may lack an acetabulum, lacks a genital cone, and has portions of the uterus entering the tribocytic organ. However, unlike *Austrodiplostomum*, *Bursacetabulus* gen. n. has a well-developed hind body and lacks a well-developed tribocytic organ. *Bursacetabulus macrobursus* sp. n. can be distinguished from *B. pelecanus* sp. n. by its larger body size and its large bell-shaped skirt around the copulatory bursa.

Acknowledgments

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Obituary Notice

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1928–1998

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417th Meeting, February 18, 1966